WHAT IS CLAIMED IS:

1. An apparatus for positioning an optical component, arranged in a receiving device (1) together with several optical components, said apparatus comprising:

   - said receiving device (1) being rotatable about an axis (3) or movable along a direction and being retainable in several retention positions;
   - said optical component being positionable in a corresponding retention position said receiving device (1) thereto;
   - a coding device (4) having coding means (5, 9), and two detectors (6, 7) detecting the coding means (5, 9);
   - said coding device (4) or the two detectors (6, 7) being associated with said receiving device (1) for detecting position of said receiving device; and the two detectors (6, 7) detecting coding means (5, 9) at spatially different points,
   - said coding device (4) being embodied in such a way that on the one hand the two detectors (6, 7) detect coding means (9) simultaneously when the receiving device (1) is located in a retention position, and on the other hand only one of the two detectors (6, 7) detects coding means (5) when the receiving device (1) is located in a region (16, 18) between two adjacent retention positions.

2. The apparatus as defined in Claim 1, wherein the coding means (5, 9) are detectable electronically, preferably by means of microswitches, wiper contacts, or capacitative or inductive sensors.

3. The apparatus as defined in Claim 1, wherein the coding means (5, 9) are detectable magnetically, preferably by means of Hall sensors.

4. The apparatus as defined in Claim 3, wherein the coding means (5, 9) encompass permanent magnets that preferably are embodied substantially as strips and are arranged substantially transversely to the motion direction of the receiving device (1).

5. The apparatus as defined in Claim 1, wherein the coding means (5, 9) are detectable optically, preferably by means of light barriers, in particular using a fork light barrier (8) or a double-reflection light barrier.

6. The apparatus as defined in Claim 5, wherein the coding means (5, 9) encompass slits, struts, or reflective regions that are arranged substantially transversely to the motion direction of the receiving device (1).

7. The apparatus as defined in Claim 5, wherein the light source (23) of the light barrier (8) is switched off when the receiving device (1) is located in a retention position.

8. The apparatus as defined in one of Claims 1 through 7, wherein a retaining device (10) is provided that is arranged in stationary fashion and retains the receiving device (1) in a retention position, preferably on a mechanical basis.

9. The apparatus as defined in Claim 8, wherein the retaining device (10) encompasses a roller or ball (11), mounted with force impingement, that as a result of the force impingement presses into a locking notch (12) provided on the receiving device (1), the locking notch (12) preferably encompassing a capture ramp (13).

10. The apparatus as defined in Claim 1, wherein the two detectors (6, 7) are arranged with respect to one another in such a way that they detect the coding means (5, 9) at an effective distance D, the distance D preferably being of the order of magnitude as the dimensions of the coding means (5, 9).

11. The apparatus as defined in Claim 10, wherein the coding device (4) is embodied in such a way that in each retention position of the receiving device (1) there is provided, at the points of the coding device (4) detected by the detectors (6, 7), a coding means (9) which has an effective width B that is greater than or equal to the effective distance D of the detectors (6, 7), i.e. $B \geq D$.

12. The apparatus as defined in Claim 10, wherein the coding device (4) is embodied in such a way that there is provided in each retention position of the receiving device (1), at the points of the coding device (4) detected by the detectors (6, 7), a coding means (9) which has an effective width B that is less than or equal to the width E of the capture region of the retaining device (10).

13. The apparatus as defined in Claim 1, wherein the coding device (4) is embodied in such a way that in the region (16, 18) of the coding device (4) in which the detectors (6, 7) detect when the receiving device (1) is located between two adjacent retention positions, at least two coding means (5) are provided that are each at a distance T from one another which preferably is substantially constant.

14. The apparatus as defined in Claim 13, wherein the coding device (4) is embodied in such a way that, in the region (16, 18) of the coding device (4) in which the detectors (6, 7) detect when the receiving device (1) is located between two adjacent retention positions, the coding device (4) has a region (17) without coding means, the effective width L of that region (17) corresponding to at least 1.1 times the distance T between two adjacent coding means (5), i.e. $L \geq 1.1 * T$.

15. The apparatus as defined in Claim 14, wherein the region (17) without coding means is arranged at a different point in each of the various regions of the coding device (4) in which the detectors (6, 7) detect when the receiving device (1) is located between two adjacent retention positions.

16. The apparatus as defined in Claim 1, wherein a motor device (20) is provided that rotates or moves the receiving device (1).

17. The apparatus as defined in Claim 16, wherein the receiving device (1) is coupled to the motor (21) via a drive train device and/or a transfer device (22) serving to transfer the rotational motion of the motor to the receiving device (1).

18. The apparatus as defined in Claim 16 or 17, wherein a control device is provided which processes the detected signals of the two detectors (6, 7) and controls the motor device (20), the output signals of the two detectors (6, 7) preferably being digitally processable.

19. The apparatus as defined in one of Claims 1 through 18, wherein the receiving device (1) encompasses a turret for the reception of microscope objectives or a magazine for the reception of filter sets, the optical

components preferably being arranged in aligned fashion in the receiving device (1).

20. A method for positioning an optical component, said optical component being arranged in a receiving device (1) together with several optical components, comprising the steps:

- moving said receiving device (1) by rotating about an axis (3) or by moving along a direction thereby being retainable in several retention positions;
- positioning said optical component in a corresponding retention by moving said receiving device (1) thereto;
- detecting coding means (5, 9) associated with said receiving device (1) during moving said receiving device (1) for detecting position of said receiving device, said coding means (5, 9) being detected at two spatially different points of the receiving device,
- on the one hand, by said detection deriving two detecting signals simultaneously when the receiving device (1) is located in a retention position,
- and on the other hand, by said detection deriving only one detecting signal when the receiving device (1) is located in a region (16, 18) between two adjacent retention positions.

21. The method as defined in Claim 20, wherein an initialization of the apparatus for positioning an optical component is accomplished by rotation or motion of the receiving device (1) through at least one retention position, the detected signals of the two detectors (6, 7) being detected and evaluated.

22. The method as defined in Claim 20, wherein by detection of the sequence of coding means and the region without coding means a position signal is derived which indicates the actual position of said receiving device.

23. The method as defined in Claim 22, whereby movement or positioning of said receiving device is controlled or adjusted by means of said position signal.